



**Before The
State Of Wisconsin
DIVISION OF HEARINGS AND APPEALS**

In the Matter of the Denial of a Permit for the Use
of *Bacillus Thuringiensis* var. *Israelensis* (Bti) to
Treat a Portion of the Branch River in Manitowoc
County for Black Flies

Case No. IH-99-08

FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER

On April 12, 1999, the Branch River Country Club filed an application with the Department of Natural Resources (Department) for a permit to apply *Bacillus Thuringiensis* *Israelensis* var. (Bti) in a trial application for black fly suppression on 4,750 feet of the Branch River in Manitowoc County. By letter dated May 10, 1999, the Department denied the application.

On June 7, 1999, Attorney Jerome L. Fox, on behalf of Branch River Country Club, filed a Petition for a Contested Case Hearing with the Department of Natural Resources. On June 16, 1999, the matter was referred to the Division of Hearings and Appeals. Pursuant to due notice a hearing was conducted on August 26, 1999, in Manitowoc, Wisconsin, Mark J. Kaiser, Administrative Law Judge, presiding. The parties filed written arguments after the hearing. The last brief was received on September 17, 1999.

In accordance with secs. 227.47 and 227.53(1)(c) Stats., the PARTIES to this proceeding are certified as follows:

Branch River Country Club, by

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Wisconsin Department of Natural Resources, by

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FINDINGS OF FACT

1. The Branch River Country Club (BRCC) is a private country club located in Manitowoc County. It owns 156 acres in the Town of Branch. Activities at the BRCC include golfing, tennis, swimming, and trap shooting. The Branch River flows through a portion of the BRCC. The Branch River has been designated an exceptional resource water. The threatened fish Greater Redhorse and the special concern fish Redside Dace have been documented to exist in the Branch River.

2. Present at the BRCC are several species of black flies. Black flies that are in the insect Order *Diptera*. The black flies that are a nuisance to the members of the BRCC belong to the species *Simulium vittatum*, *Simulium tuberosum*, *Simulium jenningsi*, and *Prosimulium mixtum/fuscum*. Among the species present is at least one biting species that use humans as its primary blood meal and several species that swarm around humans and crawl into hair, nostrils, ears, and clothing. The existence of these species of black flies constitutes a nuisance that adversely impacts the enjoyment of the BRCC facilities.

3. The stretch of the Branch River that flows through the BRCC includes riffles that are prime breeding habitat for black flies. The BRCC has requested a permit from the Department of Natural Resources (Department) pursuant to sec. NR 107.05, Wis. Adm. Code, to treat 4,750 feet of the Branch River in the Town of Branch, Manitowoc County, Wisconsin with the microbial larvicide *Bacillus thuringiensis* var. *israelensis* (*Bti*). *Bti* is a naturally occurring bacterium that kills organisms which are filter feeders and have a high gut pH. Studies have shown *Bti* to be an effective treatment for black flies. *Bti* is marketed by Abbott Laboratories under the trade name VectoBac. VectoBac is registered for use as a mosquito and black fly suppressant by the United States Environmental Protection Agency. The BRCC proposes to treat the subject stretch of the Branch River by dumping *Bti* in liquid form (VectoBac 12 AS) into the river from the bridge on Highway 10 that crosses the Branch River above the stretch that flows through the BRCC property.

4. The BRCC initially sought a permit to apply *Bti* to the subject stretch of the Branch River by application dated October 6, 1997. The Department denied this application in a letter dated February 18, 1998. The denial letter indicated that the Department needed additional information before it could make a final decision on the application. The Department asked the BRCC to develop a plan that included:

A standardized sampling procedure that will identify the taxa and number of macro invertebrates in the proposed treatment area.

Identification of the target *Simulium* species and separation of biting versus non-biting larvae.

An agreed upon larvae threshold level of the target species, before treatment is allowed.

You will also be responsible for posting public notice with the media that provides the largest circulation for user groups in the area. A public informational meeting may be required and evidence that the meeting was conducted shall accompany the application.

The plan must assure that the biological larvicide does not move beyond the treatment area.

An individual licensed by the Wisconsin Department of Agriculture Trade and Consumer Protection in Category 5 (Aquatics) will be required to administer the product if the permit is granted.

5. The BRCC contracted with Dr. Richard Merritt, an entomologist and a leading authority on black fly control, and a consulting firm, RMT, Inc., to assist them with responding to the concerns of the Department. On September 18, 1998, The BRCC submitted a second application for a permit to apply *Bti* to the subject stretch of the Branch River. The Department did not issue a decision on this application; however, the parties met and attempted to reach an accommodation under which the BRCC would be permitted to apply *Bti* to the proposed stretch of the Branch River on a trial basis. On April 12, 1999, the BRCC filed a third application for a permit to apply *Bti* to the stretch of the Branch River on a one season trial basis. On May 10, 1999, the Department issued Findings of Fact and Conclusions of Law denying the application.

6. The Department denied the application primarily because of three concerns. The three concerns are that *Bti* will affect nontarget organisms (NTOs), a substantial reduction in the black fly population will have an adverse impact on the food web, and application of *Bti* to the subject stretch of the Branch River will not significantly reduce the black fly nuisance at the BRCC. To address the Department's concerns the BRCC submitted as evidence various studies regarding the effectiveness of *Bti* for suppressing black flies and of the effects of *Bti* on NTOs and the food web.

7. The Department's first concern is the effect of the application on NTOs. *Bti* is an extremely specific larvicide. It is only toxic to organisms which are filter feeders and have a high gut pH. The studies submitted as evidence indicate that the only NTOs which appears to be susceptible to *Bti* in significant numbers are certain species of midges that are filter feeders. The evidence in the record does not indicate whether any of the susceptible species of midges are present in the stretch of the Branch River that the BRCC proposes to treat and, if so, whether they would be in a larval state at the times *Bti* would be applied. The Department's concern regarding the affect of *Bti* on NTOs can to a certain extent be alleviated by the timing of the applications of *Bti* to Branch River. Although it is impossible to prevent the destruction of some NTOs, by applying the *Bti* only at the times in the season when the larva of the targeted organisms are present, harm to NTOs can be minimized.

Additionally, although alternatives to the chemical treatment requested is not one of the criteria set forth in sec. NR 107.05(3), Wis. Adm. Code, other methods for suppressing biting black flies available to the BRCC, such as spraying the grounds of the BRCC with a chemical insecticide, would have substantially greater impacts on the environment and NTOs than the

application of *Bti* to the subject stretch of the Branch River. Although not perfect, *Bti* appears to be the most effective method of suppressing nuisance black flies with the least impact on NTOs and the environment presently available.

8. The Department's second concern is the impact of the application of *Bti* on the food web. The application of *Bti* will have an impact on the food web. However, the articles describing studies of the effects of *Bti* submitted as evidence at the hearing are inconclusive on the issue of whether the effects on the food web will be significant or adverse. Furthermore, even if the effects are adverse, they will not be irreversible. The BRCC is only seeking permission to apply *Bti* to a .9 mile stretch of the Branch River. Breeding habitat for the affected organisms exists both upstream and downstream of the stretch to which *Bti* is proposed to be applied. Additionally, none of the targeted or nontargeted organisms affected by *Bti* are endangered or threatened species and the proposal is only for a one season trial application of *Bti*.

The BRCC has the burden of proof; however, the only way the BRCC can prove that the application of *Bti* to the subject stretch of the Branch River will not adversely effect the food web at this site is to allow a one season trial application. If a significant impact on the food web resulting from the application of *Bti* occurs, future applications for the application of *Bti* can be denied. There is no apparent reason that any affected species will not quickly repopulate the stretch of the Branch River to which the BRCC proposes to apply *Bti*.

9. The Department's third concern is that the application of *Bti* to this stretch of the Branch River will not provide the nuisance relief sought. The Department argues that because breeding habitat for the targeted black flies exists both upstream and downstream of the stretch of the Branch River to which the BRCC proposes to apply *Bti* and because the range of the targeted black flies is up to thirty miles, that suppressing the black flies in one stretch of the Branch River will not provide the members of the BRCC with any noticeable relief from the black fly nuisance. There is no direct evidence that the black flies biting and swarming around members of the BRCC originated in the stretch of the Branch River to which the BRCC proposes to apply *Bti*; however, since this stretch of the Branch River is adjacent to the country club, logically, the black flies plaguing the members of the BRCC most likely include black flies which originated on this stretch of the Branch River.

The BRCC understands that applying *Bti* to a .9 mile stretch of the Branch River will not eliminate the nuisance. However, it should result in a significant reduction in the nuisance. As discussed above, the application is only for a permit for a trial application of *Bti*, if the application of *Bti* to this stretch of the Branch River does not provide the nuisance relief sought, future permit applications can be denied.

10. Upon compliance with the conditions of the permit, the proposed application will not result in significant adverse impacts.

11. The Department of Natural Resources has complied with the procedural requirements of sec. 1.11, Stats., and Chapter NR 150, Wis. Adm. Code, regarding assessment of environmental impact.

Applicable Law

Sec. NR 107.05(3), Wis. Adm. Code, provides:

The department may deny issuance of the requested permit if:

- (a) The proposed chemical is not labeled and registered for the intended use by the United States environmental protection agency and both labeled and registered by a firm licensed as a pesticide manufacturer and labeler with the Wisconsin department of agriculture, trade and consumer protection;
- (b) The proposed chemical does not have a current department aquatic chemical fact sheet;
- (c) The department determines the proposed treatment will not provide nuisance relief, or will place unreasonable restrictions on existing water uses;
- (d) The department determines the proposed treatment will result in a hazard to humans, animals or other nontarget organisms;
- (e) The department determines the proposed treatment will result in a significant adverse effect on the body of water;
- (f) The proposed chemical application is for waters beyond 150 feet from shore except where approval is given by the department to maintain navigation channels, piers or other facilities used by organizations or the public including commercial facilities;
- (g) The proposed chemical applications, other than those conducted by the department pursuant to ss. 29.62 and 29.623, Stats., will significantly injure fish, fish eggs, fish larvae, essential fish food organisms or wildlife, either directly or through habitat destruction;
- (h) The proposed chemical application is in a location known to have endangered or threatened species as specified pursuant to s. 29.415, Stats., and as determined by the department;
- (i) The proposed chemical application is in locations identified by the department as sensitive areas, except when the applicant demonstrates to the satisfaction of the department that treatment can be conducted in a manner that will not alter the ecological character or reduce the ecological value of the area.
 - 1. Sensitive areas are areas of aquatic vegetation identified by the department as offering critical or unique fish and wildlife habitat, including seasonal or lifestage requirements, or offering water quality or erosion control benefits to the body of water.
 - 2. The department shall notify any affected property owners' association, inland lake district, and riparian property owner of locations identified as sensitive areas.

(4) New applications will be reviewed with consideration given to the cumulative effect of applications already approved for the body of water.

(5) The department may approve the application in whole or in part consistent with the provisions of subs. (3) (a) through (i) and (4). Denials shall be in writing stating reasons for the denial.

(6) Permits may be issued for one treatment season only.

Discussion

Deciding whether to issue a permit for the Branch River Country Club to apply *Bti* to a stretch of the Branch River requires a three-step analysis. The first step is to evaluate whether a nuisance exists. The Department in its brief refers to the black flies as a "perceived nuisance." "Nuisance" is not defined for purposes of Ch. NR 107, Wis. Adm. Code. However the applicant submitted sufficient evidence that the black flies which bite and crawl into bodily orifices constitute a nuisance for purposes of Ch. NR 107, Wis. Adm. Code. For purposes of this analysis, the black flies present on the grounds of the BRCC are considered a nuisance.

The second step in the analysis is to determine whether the proposed chemical application will provide meaningful relief from the nuisance. In its post-hearing brief the Department characterized this as "perhaps the most important issue in this proceeding." The applicant presented substantial evidence that *Bti* applications in Minnesota, Michigan, and other states provided a noticeable reduction in the black fly population in the targeted areas. Based on the evidence presented this appears to constitute meaningful relief. One of the Department's concerns is that prime black fly habitat exists about and below the stretch of the Branch River which is proposed to be treated. The Department's witnesses speculate that black flies from these other areas will replace the ones killed by the application of *Bti* and there will be no noticeable abatement of the nuisance at the BRCC.

The BRCC characterizes its application as an application for a one-year trial. Additionally, sec. NR 107.05(6), Wis. Adm. Code provides that permits under this section may only be issued for one treatment season. If the *Bti* application does not provide meaningful relief, presumably the Branch River Country Club will look for other means to obtain relief from the black fly nuisance and/or the Department can deny future applications.

If the trial application does not provide the nuisance relief anticipated, there likely will be pressure to expand the areas of the Branch River to which *Bti* is applied. A concern regarding this pressure undoubtedly was a factor in the Department's denial of the permit application. The BRCC needs to be aware that this permit application is granted to a large extent based on the fact that it is being proposed as a trial application. No expansion of the treatment area should be considered until the impacts of the application of *Bti* on the subject stretch of the Branch River have been thoroughly studied.

The third step in the analysis is whether the chemical will result in a hazard to humans, animals, or other nontarget organisms. It is clear that *Bti* will kill larva of nonbiting species of black flies as well as the larva of some midges. The application of *Bti* will be fatal of these nontarget organisms and to that extent will be a hazard to these nontarget organisms. Although the loss of some nontarget organisms is unavoidable, by timing the application of *Bti* to the appropriate point in the life cycle of the targeted black fly species the hazard to nontarget organisms can be minimized and the beneficial impact on the targeted organisms can be maximized.

Of more concern is the general impact of losing a substantial number of these organisms on the food web in this area. Apparently this application is the first proposal to apply *Bti* to a river as a black fly suppressant. Although one must be extremely careful introducing chemicals into the environment, there does not appear to be a good reason to not allow the Branch River Country Club to test *Bti* for one season. *Bti* is a naturally occurring toxin and breaks down quickly in the environment. If the test has unexpected adverse impacts, the *Bti* will not persist in the environment or bio-accumulate in the food chain. None of the targeted or nontargeted species that will be affected are rare or endangered. Any species affected should quickly repopulate the area and restore the food web equilibrium.

The order requires the Department to issue a permit for the 2000 season. Dr. Merritt has prepared a document entitled "Field Documentation of Proposed Trial Usage of *Bti*." The document sets forth methodology to study the effectiveness of the application of *Bti* to the subject stretch of the Branch River in relieving the black fly nuisance and to address the concerns of the Department related to effects on NTOs and the food web. Allowing the BRCC to apply *Bti* to the subject stretch of the Branch River in conjunction with the study of the trial application proposed by Dr. Merritt will provide the Department with documentation to assist it in dealing with future permit applications.

CONCLUSIONS OF LAW

1. The species of black flies present on the grounds of the Branch River Country Club that bite humans and crawl into bodily orifices constitute a nuisance for purposes of chapter NR 107, Wis. Adm. Code.
2. The Branch River country Club satisfied its burden of proof that the application of *Bti* to the subject stretch of the Branch River will not have significant adverse impacts or result in a hazard to humans, animals or other nontarget organisms and will provide relief from the black fly nuisance.
3. The project is a type IV action under sec. NR 150.03(8)(g)1.a., Wis. Adm. Code. Type IV actions do not require the preparation of a formal environmental impact assessment.
4. The Division of Hearings and Appeals has authority under sec. 227.43(1)(b), Stats., and in accordance with the foregoing Findings of Fact, to issue the following order.

ORDER

The Department shall issue within 45 days of the date of this order a permit to the Branch River Country Club authorizing it to apply *Bti* up to four times to the 4750 foot stretch of the Branch River downstream of the Highway 10 bridge and flowing through the grounds of the Branch River Country Club during the spring and summer of 2000. The Branch River Country Club may apply *Bti* to the subject stretch of the Branch River up to but no more than four times during the spring and summer of 2000 and at no more than the manufacturer's recommended dosage. The Department may impose reasonable conditions on the Branch River Country Club in the permit to protect nontarget organisms to the extent practicable and without unduly affecting the effectiveness of the treatment on the targeted organisms.

Dated at Madison, Wisconsin on January 6, 2000.

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By _____
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